

## **REAL-TIME AUTOMATIC LOOP-SHAPING FOR A DISC DRIVE SERVO CONTROL SYSTEM**

## ABSTRACT OF THE DISCLOSURE

5 An apparatus and method for improving servo loop performance in a disc  
drive storage system are provided. The servo loop includes a voice coil motor  
actuator that moves the head in response to a received servo control signal. A  
sensor, located in the head, senses servo information located on the disc and  
produces a servo signal therefrom. The servo signal is combined with a reference  
10 signal to produce a position error signal. A servo controller receives the position  
error signal and responsively produces the servo control signal. The servo  
controller includes a drive signal generator that receives the position error signal  
and responsively produces a driving energy signal. A vibration damping circuit  
receives the driving energy signal and responsively produces the servo control  
15 signal. A real-time adaptive loop shaping circuit, included in the servo loop, detects  
vibrations in the position error signal and responsively adjusts at least one  
parameter of a transfer function of the vibration damping circuit to reduce  
vibrations at different frequencies in the driving energy signal.